method by which the placenta is separated from the uterus and is expelled through the birth-canal."

The Editor's theory is that the

> "placenta is not separated at once, even when the fœtus has entirely vacated the uterine cavity and the uterus has been very much reduced in size. The spongy placental mass can follow the retraction of the uterine wall until the solid villi are brought into actual contact with one another and the whole placenta forms a perfectly solid mass. As soon as that point is reached, the slightest additional contraction of the uterine muscle, with the smallest decrease in the area of the placental site, springs off instantly the entire placental mass, which can no longer be compressed."

The theory is a reasonable one, and in that respect is an advance on many that have been offered.

One of the most carefully and laboriously written contributions to the volume is that of Dr. J. C. Reeve, of Dayton, Ohio, "On the Use of Anæsthetics in Labor." So far as the reviewer is familiar with the subject, it forms one of the most complete monographs in the language and is particularly rich in historical references.

Dr. Theophilus Parvin concludes the volume with "Anomalies of the Forces in Labor." Errors in uterine action, tumors, pelvic distortions and various anomalies in fœtal development and their relation to the mechanism of labor are presented at length, in the usual clear and careful manner of the author.

Lack of space obliges us to omit many points that deserve attention. There can be no doubt that the work will earn an important place in the literature of the subject; and if the second volume equals the first in its wide range and painstaking treatment, it will stand second to none in any language. E. V. DE W.

REPORT ON THE MORTALITY AND VITAL STATISTICS OF THE UNITED STATES AS RETURNED AT THE TENTH CENSUS (JUNE 1, 1880). By JOHN S. BILLINGS, Surgeon, U. S. Army. Part I. 4to. pp. lxiii. 767. Washington: Government Printing Office, 1885. Part II. 4to. pp. clviii. 803. Washington: Government Printing Office, 1886.

THE present volumes, which are the eleventh and twelfth of the quarto series comprising the final report of the tenth census of the United States, are devoted entirely to the subjects of mortality and vital statistics for the year ending June 1, 1880. They have been compiled according to a scheme projected by Surgeon John S. Billings, who has with untiring zeal and industry personally supervised the work from the beginning to the end. As a result of this labor we have a report which is far superior in completeness of data and accuracy of details to any of its predecessors. That the data are still very imperfect no one knows better than Dr. Billings, who has worked most assiduously to obtain the best results possible under the existing laws governing the taking of the census.

Part I. is taken up entirely with the statistics of mortality. A deficiency in the returns of the enumerators having been anticipated, an attempt was made to obtain a more complete record of deaths than had heretofore been furnished, by securing the voluntary coöperation of the medical profession of the country. By this effort, 61,020 deaths have been recorded, which had not been reported by the enumerators. As a further aid in accomplishing the same object, the official records of deaths in a few States and a number of cities which have registration laws have been copied and made use of instead of the data collected by the enumerators. As these data are very nearly accurate, they have also been made use of in obtaining an approximate estimate of the amount of deficiency in the enumerator's returns. Such an estimate is very necessary, for it is known that the data are very incomplete, yet scarcely more so than similar data published by other countries. It must not be inferred from this incompleteness that the census data are of little value, for they are comparable with those of foreign countries, and, moreover, they are in fact the only data procurable for parts of the country which have no registration. An accurate system cannot be obtained at once, but each census should show signs of progress, as this census does, especially in the improvement in the methods of tabulation, which being pursued will afford valuable results when more complete data are obtainable under better laws.

As already intimated, the form of tabulation differs somewhat from that of other censuses, but care has been taken in selecting the combinations to make them comparable with the statistics of other years and of other countries. The data, with certain necessary tables of ratios and proportions, are presented without attempting to draw conclusions from them, the study of the figures being left to those who are specially interested in such research.

The county has been selected as the unit of locality instead of the State, as in previous censuses, a change which permits of many interesting and useful comparisons, heretofore impracticable. Groups of counties within the limits of the State form State Groups. These are consolidated into States, and also combined into what have been called Grand Groups, having boundaries determined by topographical features and not by State lines. The reports of deaths in fifty of the largest cities have been separately compiled, in order to make possible a comparison between rural and urban mortality. These various compilations are presented in twelve tables, which, with an index, cover 767 pages.

The mortality rate of the United States for the census year is 15.09 per 1000 of surviving population, which is an increase over the death-rates of former censuses. This increase must not be regarded as representing an actual increase in the number of deaths in proportion to the living population, but rather as indicating a more complete collection of the data upon which the death-rate is based; and yet there is proof of a deficiency still existing, as is shown by a careful study of the statistics of States and cities in which the registration is probably very nearly accurate. From these and other data, Dr. Billings has calculated the proportionate amount of deficiency in the enumerator's returns, and with this correction places the death-rate for the whole country at 18 per 1000 of surviving population. The death-rate thus obtained, which is probably very nearly correct, compares favorably with that of all other civilized countries.

The remaining part of the introduction to Part I. discusses the subjects of sex in relation to deaths, relations of age to deaths, relations of color and race, etc., to deaths, and month or season in relation to deaths. The points of interest are so concisely stated that it is impossible to abridge the matter without detracting from its value.

Part II. is by far the more interesting of the volumes on Mortality and Vital Statistics. The introduction, covering 147 pages, presents the results of a careful study of the following subjects: location in relation to births, causes of death, morbidity or sick rates, births, birth-rates and life tables, ages of living population. To these is appended a brief chapter of conclusions and recommendations. The text is illustrated by 21 handsome colored maps. Diagrams are used whenever such illustrations aid in the elucidation of the text.

The rest of the volume, 791 pages, is taken up with 54 tables furnishing data on the various subjects epitomized in the introduction. Accompanying part second is a book of plates and diagrams to illustrate approximate life tables for certain States and cities contained in volume twelfth of the census.

Consumption stands first upon the list of the principal causes of death for the census year, and then follow, in the order of their frequency, pneumonia, diphtheria, heart disease, cholera infantum and enteric fever. Scarlet fever stands eleventh on the list. It caused 16,388 deaths; of this number 8181 were males, and 8207 were females. The mean age of those reported dying of this disease in the census year was five years. Scarlet fever caused a larger proportion of deaths in the large cities than in the rest of the country. Its propagation being due to a contagion, it is not directly influenced by season or weather, locality, condition of soil or elevation of locality.

Enteric fever caused 30.19 per 1000 deaths from all causes, which is a smaller proportion than that noted in the preceding censuses. The greater part of the deaths occurred between the ages of 5 and 40 years, the mean age at death being 27 years. One fact stands out prominently, namely, that enteric fever prevails to a much less extent in cities than in other parts of the country. In the 50 largest cities, this disease caused 16.7 in each 1000 deaths from all causes, while in the rest of the country it caused 36 per 1000. August, September and October were the months in which the greatest number of deaths occurred in 31 registration cities.

The number of deaths from diphtheria largely exceeds that of the two preceding censuses, while the deaths from croup have slightly decreased. A small part of the increase of deaths from diphtheria may be attributed to the fact that physicians now report as diphtheria cases which many years ago would have been returned as croup. It is, however, very evident that diphtheria has been on the increase for several years past, especially in the northern portions of the United States. The mortality from both croup and diphtheria is greater in the rural districts than in the large cities.

Special pains has been taken to present the census data with regard to diphtheria as fully as possible. A number of colored maps showing the distribution of deaths by counties, in the northern and eastern portions of the country, convey at a glance much information on the relative prevalence of this disease in different localities, which has hitherto been defective. An examination of these maps, as Dr. Billings points out, will indicate "that the disease cannot be due to any peculiarity of climate, of geological formations, of topography or of methods of filth disposal."

The distribution of "diarrhœal diseases" is more uniform than the affections specially mentioned above. These diseases caused a greater number of deaths in the large cities than in the rural districts. This may be accounted for by the fact that the majority of deaths from these causes are among children under five years of age, and that these diseases are more prevalent among young children in large cities than in the country. In thirty-one registration districts, the greatest number of deaths occurred in the summer months, the highest mortality being reached in July.

As might be expected, consumption stands first upon the list of diseases in the order of their frequency. It caused 12,059 deaths in every 100,000 from all causes. The mean age at death was thirty-seven years. The comparison of deaths by sex shows the disease to be the more frequent in females than in males. The proportion of deaths is greatest in the large cities, and slightly greater in the colored race than in the white. The geographical distribution of consumption, as illustrated by map twelve, shows the greatest prevalence of the disease in the New England and Middle States, the Middle Atlantic Coast, the Ohio Valley, western part of Kentucky, the central part of Tennessee and on the Coast of California. The distribution of deaths is quite uniform throughout the year, though in the winter and spring months there is an excess of deaths, the maximum being reached in March.

Pneumonia, a term which probably includes a number of distinct diseases, after consumption, caused the greatest number of deaths. It is a disease of all ages, but is especially fatal in early and in advanced life. There was an excess of mortality in males, and a relatively greater mortality in the colored race. The disease was least prevalent in the coast regions, and generally more prevalent in the south and west than in the north and east. The winter and spring months were the seasons of the greatest prevalence. The proportion of deaths was greater in the rural districts than in the large cities.

The deaths from childbirth for the whole country were 3.57 per 1000 births. The mortality from this cause was greater in the rural districts than in the large cities, and about twice as great in relation to the deaths from known causes in the colored female as it is in the white. The greatest proportion of deaths from childbirth occurred at ages between twenty and twenty-five years.

Cancer, a disease which is apparently on the increase in civilized countries, has allotted to it considerable space for presenting deductions drawn from the very full data furnished by the census. It is shown that cancer is a disease which affects all ages, but the proportion of deaths increases with advancing years. Among females the proportion of deaths increases until between the ages of fifty and fifty-five years, when it reaches its maximum; among males it increases until between sixty and sixty-five years, when the proportion is greatest. The great excess of deaths from cancer in females is marked after the age of twenty, and less marked after the age of sixty-five. The tendency to cancer in the colored race is shown to be very much less than it is in the white race.

As cancer is a disease the mortality from which increases with advancing years, a large proportion of deaths from this cause in any given locality indicates to a certain extent that the locality is a healthful and a long-settled one, and that a large proportion of the inhabitants attain advanced age. A comparison of the maps showing the geographical distribution of cancer and of old age will make this point clear.

The deaths in the whole United States for the Census year from hydrophobia were 80; from lightning, 300; and from leprosy, 16; thus showing how infrequently death takes place from these causes.

For the first time in the history of the United States Census, an attempt has been made to obtain morbidity or sick rates. A portion of the country was selected sufficiently large to give a fair indication of the relative proportion of the sick of the whole population over fifteen years of age in every 1000 living on a given day, which was June 1st. The result shows the proportion to have been 12.75 per 1000 living, which appears to be a fairly accurate proportion, judging from the data furnished from mutual benefit societies in this and other countries, and the specially reliable data of the State of Rhode Island. If the annual death rate is taken at 18 per 1000, the average number of persons above fifteen years constantly sick is 36 per 1000 of living population.

Births, birth-rates and life-tables are presented in section tenth. The total number of births collected for the census year was 1,577,173, and the birth-rate was 31.4 per 1000 of the living population. This is about 15 per cent. below the true figures, which Dr. Billings has carefully estimated to be about 36 per 1000 for the whole country. For the period, 1876–1880, the mean annual birth-rates for England and Wales was 35.4 per 1000; for the German Empire, 39.3; for Austria, 39.1; and for Denmark, 31.9. The corrected returns for the United States compare favorably with the accurate data of the countries above mentioned.

Of the total number of births, 806,866 were males, and 770,307 were females, or 1047 males to each 1000 females. The birth-rate was greater in the colored race than in the white, and highest in the southern States and in the northwest.

Approximate life-tables have been prepared for a number of cities in different parts of the country and for the States of Massachusetts and New Jersey, the method employed by Dr. Farr having been adopted. The method of Dr. Humphreys was also used in connection with the data of Massachusetts and New Jersey. From these tables diagrams have been prepared, some of them being printed on semi-transparent paper, so that, by placing them one above the other, a comparison may be made of the different localities with respect to the proportional change at each age.

An interesting and valuable table is furnished by which comparison may be made of the expectation of life thus calculated with the data furnished by the English Life-table, No. 3, that founded on the experience of 30 American Insurance Companies and the famous Carlisle tables.

Section eleventh furnishes a synopsis of the ages of living population, while in the final section, the twelfth, Dr. Billings gives his conclusions and recommendations. Attention is called to the fact that, as the country becomes more thickly settled, there is an increase of the pollution of soil and water, and a multiplication of the possible channels of communicating the contagion of specific diseases, and hence the importance of towns improving their water-supply and methods of disposal of excreta. Dr. Billings strongly recommends a uniform system of registration of deaths throughout the country, with an annual publication of such data. He also makes valuable suggestions with respect to the methods of collecting the vital statistics of the next census, which, if carried out, will add greatly to the value of the data furnished by this branch of the census. W. H. F.

A GUIDE TO THE PRACTICAL EXAMINATION OF URINE. FOR THE USE OF PHYSICIANS AND STUDENTS. By JAMES TYSON, M.D., Professor of Pathology and Morbid Anatomy in the University of Pennsylvania, etc. Sixth edition, revised and corrected. With a colored plate and wood engravings. Philadelphia: P. Blakiston, Son & Co., 1888.

IN the latest edition of this well-known manual, the author has brought it fully abreast of the times, and it is now, as before, *facile princeps* among books of its kind. Too much praise cannot be given for the judicial calm exercised in advocating the use of well-tried and trustworthy methods for the detection of albumin, at a period when every day brings a new one, only to occupy valuable time and then disappear. The addition of the phenyl-hydrazin test for glucose is a valuable one. Having used the test in the modification given by Dr. Tyson for two years, we have found its simplicity and certainty all that can be desired. In regard to tests for bile-coloring matter, we have found that Huppert's test (*Arch. der Heilkunde*, 8, 351 and 476) reveals minimal quantities after Gmelin's and Heller's have both failed. G. D.

THE PRINCIPLES OF THEORETICAL CHEMISTRY, WITH SPECIAL REFERENCE TO THE CONSTITUTION OF CHEMICAL COMPOUNDS. By IRA REMSEN, Professor of Chemistry in the Johns Hopkins University. Third edition, enlarged and thoroughly revised. 12mo. pp. 318. Philadelphia: Lea Brothers & Co., 1887.

THE author does not assume too much when he takes the popularity of his book as an evidence of the growing appreciation for theoretical chemistry. By this and other works of his, notably his *Organic Chemistry*, he has done much to inspire students with a desire to know more of the philosophical principles of chemistry than ordinary text-books afford. Besides many minor additions, the reader familiar with the second edition notes entirely new chapters on chemical affinity and on the connection between constitution and chemical conduct.

No part of the general subject is so important as *valence*. In order to make the book fairly representative of the best thinking on *valence*, the old chapter with that heading has been rewritten and amplified. We know no book on the subject which in a brief compass gives a statement of chemical principles so lucid and complete.